Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form

1. Applying for (select one):
   - ☒ (a) Prop 13 Urban Water Conservation Capital Outlay Grant
   - ☐ (b) Prop 13 Agricultural Water Conservation Capital Outlay Feasibility Study Grant
   - ☐ (c) DWR Water Use Efficiency Project
2. Principal applicant (Organization or affiliation): Placer County Water Agency
3. Project Title: Auburn-Bowman System Audit, Leak Detection and Repair
4. Person authorized to sign and submit proposal:
   - Name, title: David Breninger
   - Mailing address: P. O. Box 6570. Auburn, CA 95604
   - Telephone: 530-823-4864
   - Fax.: 530-823-4884
   - E-mail: DBreninger@pcwa.net
5. Contact person (if different):
   - Name, title.: Harley Lukenbill
   - Mailing address.: P. O. Box 6570. Auburn, CA 95604
   - Telephone: 530-823-4864
   - Fax.: 530-823-4884
   - E-mail: HLukenbill@pcwa.net
6. Funds requested (dollar amount): 168,100
7. Applicant funds pledged (dollar amount): 110,600
8. Total project costs (dollar amount): 278,700
9. Estimated total quantifiable project benefits (dollar amount): 262,166 (Discounted to 2001 dollars cost)

   Percentage of benefit to be accrued by applicant: 100% of the avoided costs benefit

   Percentage of benefit to be accrued by CALFED or others: 50% of the avoided costs benefit (see text, Section D-4)

Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form (continued)

10. Estimated annual amount of water to be saved (acre-feet): 154 ac-ft/year

    Estimated total amount of water to be saved (acre-feet): 3,072 ac-ft

    Over 20 years 3,072 ac-ft

    Estimated benefits to be realized in terms of water quality, instream flow, other: Dry year flow increase, instream flows,

11. Duration of project (month/year to month/year): July/2002 to December/2004

12. State Assembly District where the project is to be conducted: 4

13. State Senate District where the project is to be conducted: 1

14. Congressional district(s) where the project is to be conducted: 4

15. County where the project is to be conducted: Placer County

16. Date most recent Urban Water Management Plan submitted to the Department of Water Resources: December 2000

17. Type of applicant (select one):
    Prop 13 Urban Grants and Prop 13 Agricultural Feasibility Study Grants:
    - ☐ (a) city
    - ☐ (b) county
    - ☐ (c) city and county
    - ☐ (d) joint power authority
    - ☒ (e) other political subdivision of the State, including public water district
    - ☐ (f) incorporated mutual water company

    DWR WUE Projects: the above entities (a) through (f) or:
    - ☐ (g) investor-owned utility
    - ☐ (h) non-profit organization
    - ☐ (i) tribe
    - ☐ (j) university
    - ☐ (k) state agency
    - ☐ (l) federal agency

18. Project focus:
    - ☐ (a) agricultural
    - ☒ (b) urban

Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form (continued)

19. Project type (select one):
Prop 13 Urban Grant or Prop 13 Agricultural Feasibility Study Grant capital outlay project related to:

- ☒ (a) implementation of Urban Best Management Practices
- ☐ (b) implementation of Agricultural Efficient Water Management Practices
- ☐ (c) implementation of Quantifiable Objectives (include QO number(s)

.....

- ☐ (d) other (specify)

.....

DWR WUE Project related to:

- ☒ (e) implementation of Urban Best Management Practices
- ☐ (f) implementation of Agricultural Efficient Water Management Practices
- ☐ (g) implementation of Quantifiable Objectives (include QO number(s))
- ☐ (h) innovative projects (initial investigation of new technologies, methodologies, approaches, or institutional frameworks)
- ☐ (i) research or pilot projects
- ☐ (j) education or public information programs
- ☐ (k) other (specify)

.....

20. Do the actions in this proposal involve physical changes in land use, or potential future changes in land use?

- ☐ (a) yes
- ☒ (b) no

If yes, the applicant must complete the CALFED PSP Land Use Checklist found at http://calfed.water.ca.gov/environmental_docs.html and submit it with the proposal.

Consolidated Water Use Efficiency 2002 PSP
Proposal Part One
B. Signature Page

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form is authorized to submit the proposal on behalf of the applicant; and

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant.

Signature _____ Date Feb 20 2002

David A. Breninger
General Manager
Placer County Water Agency

PROPOSAL PART TWO

This section includes a brief project summary and discusses the relevance, importance, technical/scientific merit, feasibility, monitoring and assessment, qualifications, and benefits and costs of the proposed project.

PROJECT SUMMARY

The proposed project consists of conducting a system-wide water audit, leak detection, and leak repairs of the Auburn-Bowman Domestic System of the Placer County Water Agency (PCWA). The system water audit portion of this project consists of installing one large electronic water meter and vault on the clear-well at the Auburn Water Treatment Plant, testing a population of residential water meters to determine meter accuracy, recording local fire department usage, and city and county construction and street cleaning usage, and estimating water theft over approximately twelve (12) months.

The system leak detection and repair portion of this project will include contracting a professional leak detection contractor to evaluate the approximate 104 miles of piping within the system. For the leak repair portion of this project, it is anticipated that a total of forty (40) leaks consisting of approximately ten (10) leaks will be identified and repaired per calendar quarter for four (4) quarters.

The Auburn-Bowman Domestic System receives its water from PG&E's Wise/South Canal and PCWA's Boardman Canal. This water is used to supply PCWA's Bowman and Auburn Water Treatment Plants as well as raw water customers. These two water treatment plants provide treated water service to the communities of Bowman, Auburn, and Newcastle. Figure 1 depicts the location of the five zones served by PCWA. The Auburn-Bowman Domestic System is located within Zone 1. Figure 2 depicts the locations of the key Auburn-Bowman Domestic System water supply facilities.

The efficient use of California's limited water supplies is a critical local, regional, and statewide water issue. Portions of the Auburn-Bowman System have a leak history spanning several years and contribute disproportionately to Zone 1's unaccounted-for water (UAW). The goal of this project is to find and repair as least 40 leaks and determine water meter accuracy and the resulting water loss.

The project cost is **$278,700**. This grant application is requesting **$168,100** in funding. It is expected that over **three (3) percent** of the Zone 1 UAW use will be conserved through these repairs resulting in an average water savings of approximately **154 ac-ft/year**, or **3,072 ac-ft** over a 20 year period.

A. SCOPE OF WORK: RELEVANCE AND IMPORTANCE

This section describes the nature, scope, and objectives of the project. It also includes a statement of critical local, regional, Bay-Delta, State and federal water issues and a description of how this project is consistent with local and regional water management plans and other resource management plans.

Figure 1. Location Map

Figure 2. Facility Location Map

A.1 Nature, Scope, and Objectives of the Project

The nature of this project is to implement a system-wide water audit, conduct leak detection and immediately repair at least 40 leaks. The objectives of this project are to significantly increase water use efficiency by reducing the amount of water loss from leaks. This project would implement Best Management Practice No. 3 as defined by the Memorandum of Understanding Regarding Urban Water Conservation in California.

Leaking water mains contribute significantly to water loss. Unaccounted-for water is unmetered water use such as for fire protection and training, system and street flushing, sewer cleaning, construction, system leaks, water use at the treatment plants, and unauthorized connections. Unaccounted-for water can also result from meter inaccuracies.

PCWA has two types of unaccounted-for water. The first type is the unaccounted-for water occurring in the raw water transmission system between the water source and the delivery points to the municipal water treatment plants and raw water customers. The second type is the unaccounted-for water occurring in the treated water system between the surface water treatment plants and the retail customers. This project targets the second type of unaccounted-for water.

Currently, PCWA's Zone 1 experiences approximately 18 percent of its annual water production as unaccounted-for water (Brown and Caldwell, Urban Water Management Plan, December 2000). However, because the Auburn-Bowman system includes all of the oldest parts of Auburn and its aged infrastructure, PCWA estimates the UAW within the Auburn-Bowman system is disproportional and could be as high as 25 percent of the total water production for that portion of the system.

The Auburn-Bowman Domestic System is within Zone 1, one of five (5) retail zones of PCWA. The Auburn-Bowman Domestic System encompasses nearly 20 percent of PCWA's total Zone 1 connections, or approximately 5,423 connections. PCWA utilizes surface water from the Yuba River, American River, and the Bear River as part of its water supply. The Auburn-Bowman Domestic System receives its water from PG&E's Wise/South Canal and PCWA's Boardman Canal. This water is used to supply PCWA's Bowman and Auburn Water Treatment Plants as well as raw water customers. These two water treatment plants provide treated water service to the communities of Bowman, Auburn, and Newcastle.

The efficient use of California's limited water supplies is a critical local, regional, and statewide water issue. The objective of this project is to perform a water audit on the entire Auburn-Bowman Domestic System, perform leak detection surveys of the entire system, and perform leak repairs over a three-year time frame. The goal is to significantly reduce water losses through meter inaccuracies and leak repairs.

The system water audit portion of this project consists of installing two large water meters on each of the clear-wells at the Bowman and Auburn Water Treatment Plants, testing a population of residential water meters to determine meter accuracy, record local fire department usage, record city and county construction and street cleaning usage, and estimate water theft over approximately twelve (12) months.

The system leak detection and repair portion of this project will include contracting a professional leak detection contractor to evaluate the approximate 104 miles of piping within the system. For the leak repair portion of this project, it is anticipated that approximately ten (10) leaks will be identified and repaired per calendar quarter for four (4) quarters.

A.2 Statement of Issues, Project Need, and Project Consistency

The efficient use of California's limited water supplies is a critical local, regional, and statewide water issue. PCWA utilizes surface water from the Yuba River, American River, and the Bear River as part of its water supply. The purpose of this project is to significantly increase water use efficiency by reducing the amount of unaccounted-for water. This project will provide benefit to the Bay-Delta by ensuring that water diverted upstream is used efficiently.

PCWA is a stakeholder in three major water management teams: Sacramento Area Water Forum (Water Forum), the American River Basin Cooperating Agencies (ARBCA), and the Sacramento Regional Water Authority (RWA). This project is consistent with regional water management plans such as the ARBCA Regional Water Master Plan (RWMP) and the Water Forum Agreement. This project is also consistent with statewide water management plans such as the California Urban Water Conservation Council's Memorandum of Understanding (MOU) regarding Urban Water Conservation in California.

PCWA is a member of the Water Forum. In the year 2000, the Water Forum finalized the *Water Forum Agreement* (Agreement) which contains seven major elements to meet its objectives. Water conservation is the fifth major element in the Agreement. The water conservation portion of the Agreement describes each water purveyor's commitments to implement BMPs. These BMPs were derived from the original MOU developed by the CUWCC, and then customized for the Water Forum conservation agreements prepared for the individual purveyors. The Water Forum Agreement does not specifically quantify the amount of leak detection and repair that is required to be accomplished every year.

This project involves the implementation of urban water conservation best management practice (BMP) number 3, *System Water Audits, Leak Detection and Repair*, as defined by the California Urban Water Conservation Council (CUWCC). The unpredictable water supply and ever increasing demand on California's complex water resources have resulted in a coordinated effort by the California Department of Water Resources (DWR), water utilities, environmental organizations, and other interested groups to develop a list of urban BMPs for conserving water. This consensus-building effort resulted in the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU), which formalizes an agreement to implement these BMPs and makes a cooperative effort to reduce the consumption of California's water resources.

This project is compatible with PCWA's 2000 UWMP (Brown and Caldwell, Urban Water Management Plan, 2000) and PCWA's ongoing efforts to achieve greater water use efficiency. PCWA's Board of Directors recognizes the importance of water management and conservation programs. PCWA's adopted rules and regulations include the general policy of the water system that states in part that the PCWA will operate and maintain the water system in an efficient and economical manner and distribute and supply water as fairly and equitably as possible.

In August 1999, PCWA requested assistance from DWR's Water Use Efficiency Office to assess water efficiency opportunities in Zone 1. The February 2000 DWR study recommended that PCWA give attention to the 16% unaccounted-for water in Zone 1. The study states that verifying metered uses is one of the first tasks recommended by the AWWA *Water Audits and Leak Detection Manual*. Meters that are approaching 15 to 20 years of service may record less water use than actually delivered to the customer and contribute to declining revenues. The project proposed for funding with this application is an integral step in implementing this recommendation.

B. SCOPE OF WORK: TECHNICAL/SCIENTIFIC MERIT, FEASIBILITY, MONITORING AND ASSESSMENT

This section describes the methods, procedures and facilities associated with the project. A task list and schedule and quarterly expenditure of the project are also included in this section.

B.1 Methods, Procedures, and Facilities

The PCWA will use standard engineering, and construction methods to implement this project. The leak detection will be conducted by an outside consultant. Standard purchasing and contracting procedures will be used to purchase pipe in bulk and use a general contractor for leak detection and paving as defined in the project specifications in Appendix A. PCWA will use in-house staff to conduct the water audit and perform leak repair. This project does not require the purchase of land or easements. All planning, design and engineering is being performed in-house. Where required, PCWA will acquire encroachment permits.

The system water audit will be conducted using the "Water Audit and Leak Detection Guidebook" by the California Department of Water Resources and AWWA Water Conservation Guidebook No. 5.

For each project, PCWA assigns an engineer to serve as a Project Engineer/Manager. The project manager is responsible for the overall conduct of the project. This includes assuring that an environmental document is prepared and appropriate land, easements and right-of-way are obtained. The project manager is also responsible for the design and preparation of plans and specifications, bidding, construction management, and assuring construction inspection and testing are performed. The contract with the leak detection contractor will specify detailed reporting by pipe sections. The report will include estimates of gallon per day losses.

Each leak repair will be inspected by either PCWA staff inspectors or PCWA consulting inspectors. PCWA will provide full time inspection on each project. The City of Auburn Department of Public Works will inspect the road rehabilitation portion of the project. Soils testing will be required and will be performed by a consulting geotechnical engineering firm employed by PCWA. Pressure testing will be performed on the pipeline. The pressure tests will be conducted and monitored by the PCWA inspector.

B.2 Task List and Schedule

The tasks for implementation of this project and the project schedule are described below and presented on Figure 3. The schedule includes deliverable items, due dates, and projected costs for

each task. The schedule bar chart also identifies which tasks are considered to be inseparable if only a portion of the project is funded. Table B-1 presents a quarterly expenditure projection.

Tasks

1. Develop action plan. Install one large electronic water meter on the clearwell at the Auburn Water Treatment Plant.
2. Sample test one hundred (100) small residential meters to determine meter accuracy for the system and study the cost of bulk meter replacement program. Conduct water audit.
3. Prepare contract documents, select contractor, and conduct leak detection survey.
4. Repair leaks (using in-house staff).
5. Prepare Interim Progress Report with preliminary water system audit results and description of leak detection and repairs to date.
6. Prepare Monitoring and Assessment Report. This report will be written following the end of the project. It will include results of the system water audit, meter testing results, a summary of leak repairs, and the resulting water use and water savings.

Figure 3. Project Timeline

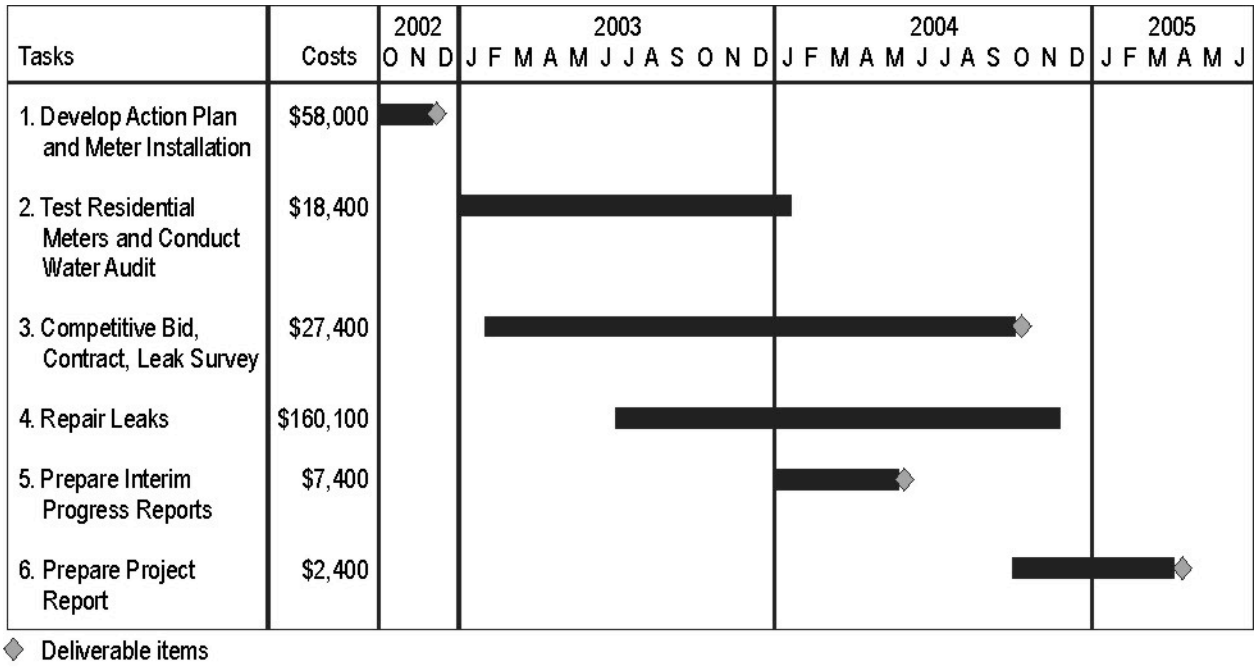

Table B-1. Quarterly Expenditure Projection

Quarter	Months	Expenditure, dollars
2002		
4	October-December	58,000
2003		
1	January-March	7,000
2	April-June	8,000
3	July-September	35,000
4	October-December	35,000
2004		
1	January-March	36,000
2	April-June	34,000
3	July-September	31,000
4	October-December	28,700
2005		
1	January-March	6,000
Total		278,700

B.3 Monitoring and Assessment

A list of project-specific performance measures that will be used to assess project success in relation to its goals and reports planned for submittal is as follows:

- The key performance measure will be actual water savings that results from this project. Water losses will be measured from all identified leaks.

- One Interim Progress Report will be prepared. This report will be a status report summarizing preliminary water system audit results, meter testing and analysis, and leak detection repairs conducted to date. This interim report will be used to document the progress of the project and determine if the project is on schedule and aid in project control. The progress report will be prepared the first quarter following completion of the auditing cycle.

- A Monitoring and Assessment Report will be prepared following project completion. This report will monitor and assess the before and after water use in the Auburn-Bowman Domestic System. The report will also include the final water audit findings, meter testing results, summarize all leak detection and repairs, and recommendations for bulk meter replacement program.

The Interim Progress Report and the Monitoring and Assessment Report will be made available to the public at the PCWA office. The information will be made available to the public through various outreach methods.

B.4 Preliminary Plans, Specifications, and Certification Statements

Preliminary plans and specifications are provided in Appendix A.

C. QUALIFICATIONS OF THE APPLICANTS AND COOPERATORS

The qualifications of the project manager, cooperators, and partners to be involved in the real-time flow monitoring program for Placer County Water Agency (PCWA) are discussed in this section. A description of PCWA is also included.

C.1 Resumes

The project manager responsible for the water system audit, leak detection and leak repair program will be Harley Lukenbill, the Water Efficiency Manager. Mr. Lukenbill's resume is included in Appendix B. Mr. Lukenbill has four years of experience associated with the PCWA water distribution system.

C.2 External Cooperators

No external cooperators will be utilized for the PCWA water system audit, leak detection and leak repair program.

D. BENEFITS AND COSTS

This section includes a breakdown and justification of the project budget and cost sharing information. Also described and analyzed are the benefits and costs of this project.

D.1 Budget Breakdown and Justification

Table D-1 presents a detailed estimated budget that includes relevant line items for capital outlay project proposals and justification of each line item. This table also indicates the amount of cost sharing for each element.

Table D-1. Detailed Budget – Capital Outlay Project Proposal

Task	Item	Justification	Labor		Other direct costs, dollars	Total, dollars	PCWA portion	Prop 13 portion
			Hours	Dollars				
	Land Purchase /Easement		0	0		0		0
1	Planning/Design/Engineering	Mapping and meter design	120	4,800		4,800	0	4,800
1	Meter Installation	Auburn Treatment Plant - 1 electronic meter in vault	80	3,200	50,000	53,200	26,600	26,600
2	Water Audit Meter Testing	Sample 100 meters for accuracy	200	8,000	3,000	11,000	0	11,000
3	Leak Detection Contract	Outside service	0	0	20,000	20,000	10,000	10,000
4	Materials/Installation	40 leaks at 30 hours each	1,200	48,000	40,000	88,000	44,000	44,000
4	Equipment Purchases/Rentals Inspection and Paving	40 leaks at $1,500 each		0	60,000	60,000	30,000	30,000
2, 3, 4, 5, 6	Construction/Administration/ Overhead[a]	Water Efficiency Manager & Staff	320	32,000	5,000	37,000	0	37,000
4	Project/Legal/License Fees		16	3,200	1,500	4,700	0	4,700
	Contingency					0	0	0
	Other					0	0	0
	Project Total					278,700	110,600	168,100

[a] Assumed evenly split between the 5 noted tasks.

D.2 Cost Sharing

PCWA is requesting **60 percent** or **$168,100** in funding from the Proposition 13 Urban Water Conservation Program. PCWA will commit **$110,600** or a cost share **50 percent** of the total construction costs.

There are no additional funding commitments or cost sharing agreements for this project.

D.3 Benefit Summary and Breakdown

There are multiple expected beneficial outcomes of this project and physical changes will occur as a result. The value of those outcomes and physical changes are both quantifiable and non-quantifiable. The quantifiable values of physical changes that will occur as a result of this project and the beneficiary of each benefit are listed in Table D-2. Project outcomes and benefits will be shared among the project's beneficiaries and may directly or indirectly contribute to CALFED goals.

Table D-2. Quantifiable Physical Changes, Expected Benefits, and Beneficiaries

Physical change	Expected benefit	Beneficiary
• Reduce unaccounted-for water • PCWA can "stretch" their surface water entitlements from the Yuba, Bear, and American Rivers	154 ac-ft/year	CALFED Goal-upstream water in PCWA used more efficiently
PCWA will save money on avoided costs of a new water supply	$160/acre-foot of water saved	PCWA/customer

Non-Quantifiable project outcomes and benefits are listed and described in Table D-3. It is indicated how each non-quantified outcome or benefit will be shared among the project beneficiaries. The non-quantified benefits expected to directly or indirectly contribute to CALFED goals are also identified and delineated.

Table D-3. Non-quantifiable Benefits

Physical change	Expected benefit	Beneficiary
Decreased unaccounted-for water within the service area by this project will allow PCWA to delay the date of need to used their full water right entitlements.	Improved Bay-Delta ecosystem	CALFED Goal
Less water pumped into the system	Energy savings	Energy provider/PCWA

D-4. Assessments of Costs and Benefits

This section includes an assessment that summarizes the costs and benefits of the proposed project. The major analysis assumptions are listed and explained. This section also shows the present value of the quantified costs and benefits to the applicant, CALFED, and other parties affected by the project and summarizes non-quantified costs and benefits to the applicant, CALFED, and other parties affected by the project.

This project is locally cost effective using the entire project cost. Based on the benefit-cost ratio assessment, the project has a benefit to cost ratio of 1.04. Since this number is greater than one, it indicates an economically justifiable project.

Below is a list and explanation of all the quantifiable benefits/costs assumptions and methodologies.

1. The value of conserved water for PCWA is $160/ac-ft. This is the marginal cost of water, which includes the amortized cost for expansion of water treatment plants, pipeline, operations and maintenance costs, and additional pumping costs.

2. All quantified benefits and costs are expressed in year 2001 dollars using a 6 percent discount rate as required in part D.4.b and D.4.c of the Consolidated Water Use Efficiency 2002 Proposal Solicitation Package.

3. The annual water savings that would result from for this project is estimated to be approximately 154 ac-ft/year (96 gpm). The amount of water lost from leaks is not precisely known. However, reasonable estimates of water loss can be made based on system knowledge, historical information, and use of leak loss tables in the *BMP Costs and Savings Study* (California Urban Water Conservation Council (CUWCC), 2000).

   The Auburn-Bowman system uses 5,119 ac-ft/yr, which is approximately 20 percent of the total Zone 1 water production. Zone 1 has an average unaccounted-for water use of 18 percent of production per year. It is estimated that 28 percent of this water loss occurs in the Auburn-Bowman portion of the Zone 1 system. Because the Auburn-Bowman system includes all of the oldest parts of Auburn and its aged infrastructure the unaccounted-for water within the Auburn-Bowman system is estimated to be as high as 25 percent of the water used in that part of the system. Table D-4 summarizes the water production, unaccounted for water, and water savings.

Table D-4. Summary of Zone 1 and Auburn-Bowman Water Usage

Water usage	ac-ft/yr
Zone 1 water production	25,590
Auburn-Bowman system	5,119
Zone 1 unaccounted-for water	4,606
Auburn-Bowman unaccounted-for water	1,280
Expected water savings (this project)	154

   PCWA will repair 40 existing leaks in the Auburn-Bowman system in this project. It is estimated that there will be an annual savings of 3.85 ac-ft per leak (2.4 gpm). This savings estimate per leak is conservatively low compared to the leak loss calculation data in Table 2, Leak Losses for Circular Holes Under Differential Pressure, in the *BMP Costs and Savings Study*, which shows leak losses for a 0.5 inch diameter hole at 59.7 gpm at 100 psi. This project's savings estimate per leak is conservatively low compared to leak loss data in Table 3, Leak Losses for Joints and Crack Under Differential Pressure, in the *BMP Costs and Savings Study*, which shows leak losses for a 1.0 inch by 0.06 inch crack at 14.2 gpm at 100 psi (California Urban Water Conservation Council (CUWCC), 2000).

4. This project includes a total of 40 leak repairs. (30 leaks repaired in 2003 and 10 leaks repaired in 2004).

5. The total cost per leak repair is $3,700. This cost includes equipment purchases and rentals, and inspection and paving costs at $1,500 per leak repair (Task 4), and materials/installation costs of $2,200 per leak repair (Task 4).

6. The cost of leak detection is $20,000 for the entire project, which is an average cost of $500/leak repair.

7. The water audit included in this project totals a cost of $110,700. This cost includes mapping and meter design (Task 1), one electronic meter in vault at the Auburn Treatment Plant (Task 1), administration and overhead of the water efficiency manager and staff (Tasks 2, 3, 4, 5, 6), water audit meter testing and sampling of 100 meters for accuracy (Task 2) and project legal and license fees (Task 4).

8. The life span of leak repairs is 20 years. This is the life of the repair based on information provided by Placer County Water Agency.

An economic analysis of this project, based on the assumptions listed above is shown in Table D-5. The economic analysis is presented in Table D-6. The present values of the quantified costs and benefits for the applicant, each project beneficiary, and CALFED are quantified in Table D-7. The applicant will realize cost benefits through less water use. CALFED will realize benefits through less surface water diversions than would otherwise occur. It is assumed that CALFED will realize 50 percent of the cost benefit. A summary of the non-quantified costs and benefits to the applicant, each project beneficiary, and CALFED are summarized in Table D-8.

Table D-5. Economic Analysis Assumptions

Assumption		
No.	Assumption	
(1)	Value of conserved water ($/AF) =	160
(2)	Discount rate (real) =	6.00%
(4)	Annual water savings (AF/leak repair) =	3.8
(8)	Water audit cost for 2002 =	110,700
(8)	Water audit cost for 2003 =	0
(8)	Water audit cost for 2004 =	0
(7)	Leak detection cost ($/leak) =	500
(6)	Cost per leak repair ($/repair) =	3,700
(5)	No. of leaks repaired in 2002 =	0
(5)	No. of leaks repaired in 2003 =	30
(5)	No. of leaks repaired in 2004 =	10

Table D-6. Economic Analysis

Calendar Year	No. of Leaks Repaired	Incremental Water Savings (AF/yr)	Annual Water Savings (AF/yr)	Benefits ($)		Costs ($)			
				Total Undiscounted Benefits (Avoided Costs)	Total Discounted Benefits	Capital Costs	Operating Expenses	Total Undiscounted Costs	Total Discounted Costs
Assumption	(5)	(4)		(1)	(2)	(6), (7)	(8)		(2)
2002	0	0	0	0	0	0	110,700	110,700	104,434
2003	30	115	115	18,432	16,404	126,000	0	126,000	112,140
2004	10	38	154	24,576	20,634	42,000	0	42,000	35,264
2005		0	154	24,576	19,466	0		0	0
2006		0	154	24,576	18,365	0		0	0
2007		0	154	24,576	17,325	0		0	0
2008		0	154	24,576	16,344	0		0	0
2009		0	154	24,576	15,419	0		0	0
2010		0	154	24,576	14,546	0		0	0
2011		0	154	24,576	13,723	0		0	0
2012		0	154	24,576	12,946	0		0	0
2013		0	154	24,576	12,214	0		0	0
2014		0	154	24,576	11,522	0		0	0
2015		0	154	24,576	10,870	0		0	0
2016		0	154	24,576	10,255	0		0	0
2017		0	154	24,576	9,674	0		0	0
2018		0	154	24,576	9,127	0		0	0
2019		0	154	24,576	8,610	0		0	0
2020		0	154	24,576	8,123	0		0	0
2021		0	154	24,576	7,663	0		0	0
2022		0	154	24,576	7,229	0		0	0
2023		0	38	6,144	1,705	0		0	0
Totals:	40	154	3,072	491,520	262,166	168,000	110,700	278,700	251,838
								Benefit cost ratio:	**1.04**

Table D-7. Summary of Quantifiable Present Value Costs and Benefits

	Costs, dollars	Benefits	
		Water, dollars	Water, ac-ft
PCWA	251,838	262,166	3,072
CALFED	None	131,083	3,072

Table D-8. Summary of Non-quantifiable Costs and Benefits

	Non-quantified costs	Non-quantified benefits
PCWA	None	• Increased water supply reliability • Increased water supply accounting
CALFED	None	• Increased water supply reliability to water users while at the same time assuring the availability of sufficient water to meet fishery protection and restoration recovery needs • More water now for Bay-Delta use
Energy provider	None	• Energy savings as a result of less water pumped into the system.
Yuba River Ecosystem	None	• Improved aquatic and terrestrial habitat in South Yuba River • More water available to meet fishery protection and restoration recovery needs now

E. OUTREACH, COMMUNITY INVOLVEMENT AND ACCEPTANCE

This project is consistent with the California Urban Water Conservation Council's Memorandum of Understanding regarding water conservation. It is also consistent with PCWA's Water Forum Agreement and the Regional Water Authority (RWA). A letter of support from the RWA is included in Appendix C.

Because this project provides a regional-wide benefit, outreach efforts will not focus on any particular customer sector. Due to the nature of this project, it is not appropriate nor practical to extend the project to specifically target disadvantaged communities within the County. There are no tribal entities particularly impacted by this project.

On projects that impact its customer's water service, PCWA sends out written notification or uses door hangers to inform the impacted customers of the pending service interruption. Generally the notification is mailed out in sufficient time to be received approximately three days prior to the service interruption. Door hangers, if used, are also disbursed approximately three days prior to the service interruption. Emergency numbers are identified on both the written and door hanger notices. Normally, the notification will include a backup date in case there is some complication that deems it inappropriate to have the service shut down. If traffic or access will be impacted this is also covered in the notification process.

If PCWA is not able to conduct the work at the times identified in the notices, new notices with the new dates will be given to the customers and property owners as identified above.
Third party impacts include temporary inconvenience to local residents due to meter installation. Meter installations will take no longer than four to five hours per meter. Some meter installations will require encroachment upon residents' sidewalks, driveways, or front yard lawn.

Information on the results of this project will be disseminated through the PCWA's public outreach program. PCWA operates an extensive public information program and associated schools program, which provide materials, speakers, and outreach activities to the general public.

Outreach activities will include publications and Web site development, public meetings, PCWA participation at community events, multimedia campaigns, interagency partnerships, corporate environmental fairs, professional trade shows, water conservation workshops and seminars and a speakers bureau.

Summaries of the results and benefits of this project will be developed by PCWA staff and made available to PCWA customers. Inserts will be included in billing mailer inserts, newsletters, and agency Web sites.

APPENDIX A

Preliminary Plans, Specifications, and Certification Statements

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TABLE OF CONTENTS

Section T – Technical Provisions (continued)

3. Earthwork
    - 3.1 Scope
    - 3.2 Trench Excavation
    - 3.3 Trench Width
    - 3.4 Special Foundation Bedding Treatment
    - 3.5 Trench Backfill
        - 3.5.1 Bedding and Backfill
        - 3.5.2 Sand Slurry Backfill
        - 3.5.3 Compaction
    - 3.6 Embankment Construction
    - 3.7 Structure Backfill

Standard Drawings

SA4 Standard Service Connection, Meters 1" and Smaller
SA5 Standard Service Connection, Meters 1-1/2" and 2"
SA10 Pipe Trench Bedding and Backfilling
SA11 Water/Sewer Crossing and Parallel Pipe Construction

Standard Specification/Drawing Revisions

1.2 Treated Water Service Piping
3. Earthwork
SA4 Standard Service Connection, Meters 1" and Smaller
SA5 Standard Service Connection, Meters 1-1/2" and 2"
SA10 Pipe Trench Bedding and Backfilling
SA11 Water/Sewer Crossing and Parallel Pipe Construction

Certification Statements

Insert specifications and drawings.

Certification Statements

Engineering feasibility statement

I, MAYNARD Donald Reighley Jr. a California registered civil engineer, have reviewed the information presented in support of this application. Based on this information, and any other knowledge I have regarding the proposed project, I find that it can be designed, constructed, and operated to accomplish the purpose for which it is planned. There is a sufficient water supply for the project. The information I have reviewed to document this statement is included (provide list, e.g., feasibility studies, engineering design studies, water rights permits, etc.).

Documents Reviewed:

1. TASK SCHEDULE
2. STANDARDS AND SPECIFICATIONS

M. Donald Reighley Jr.
(Original signature and stamp with expiration date)

REGISTERED PROFESSIONAL ENGINEER
M. DONALD REIGHLEY, JR.
No. 26365
expires 3/05
CIVIL
STATE OF CALIFORNIA

APPENDIX B

Resume

Placer County Water Agency
P. O. 6570
Auburn, California

Harley Lukenbill

Objective

Water Audit Project Manager

Experience

2000 - 2002 Placer County Water Agency Auburn, CA

Water Efficiency Manager

- Crafted the Updated Urban Water Management Plan
- Representative on the Regional Water Authority Water Efficiency Team
- Created the Agency Meter Maintenance and Test Facility

1998 - 2000 Placer County Water Agency Auburn, CA

Deputy Director Of Customer Service

- Crafted the Water Forum Conservation Plan
- Supervised Meter Services
- Started the Water Audit Program training course for new recruits — speeding profitability.

1992 - 1996 Millview Water District Ukiah, CA

General Manager

- Expanded sales team from 50 to 100 representatives.
- Tripled division revenues for each sales associate.
- Expanded sales to include mass market accounts.

Education

1971–1975 Southridge State University Southridge, SC

- B.A., Business Administration and Computer Science.
- Graduated Summa Cum Laude.

Interests

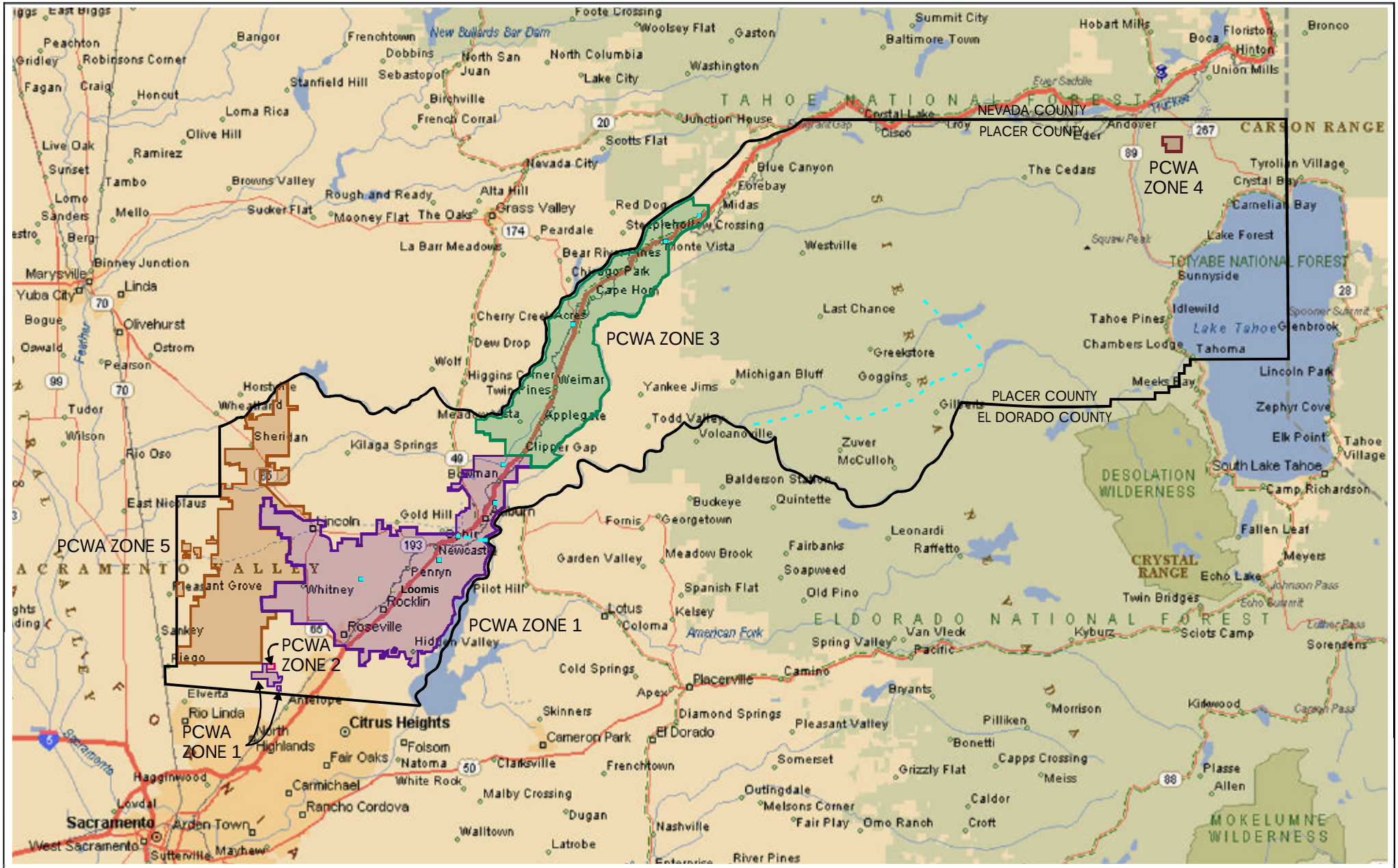
SR Board of Directors, running, gardening, carpentry, computers.

APPENDIX C

Letter of Support

Insert letter of support.

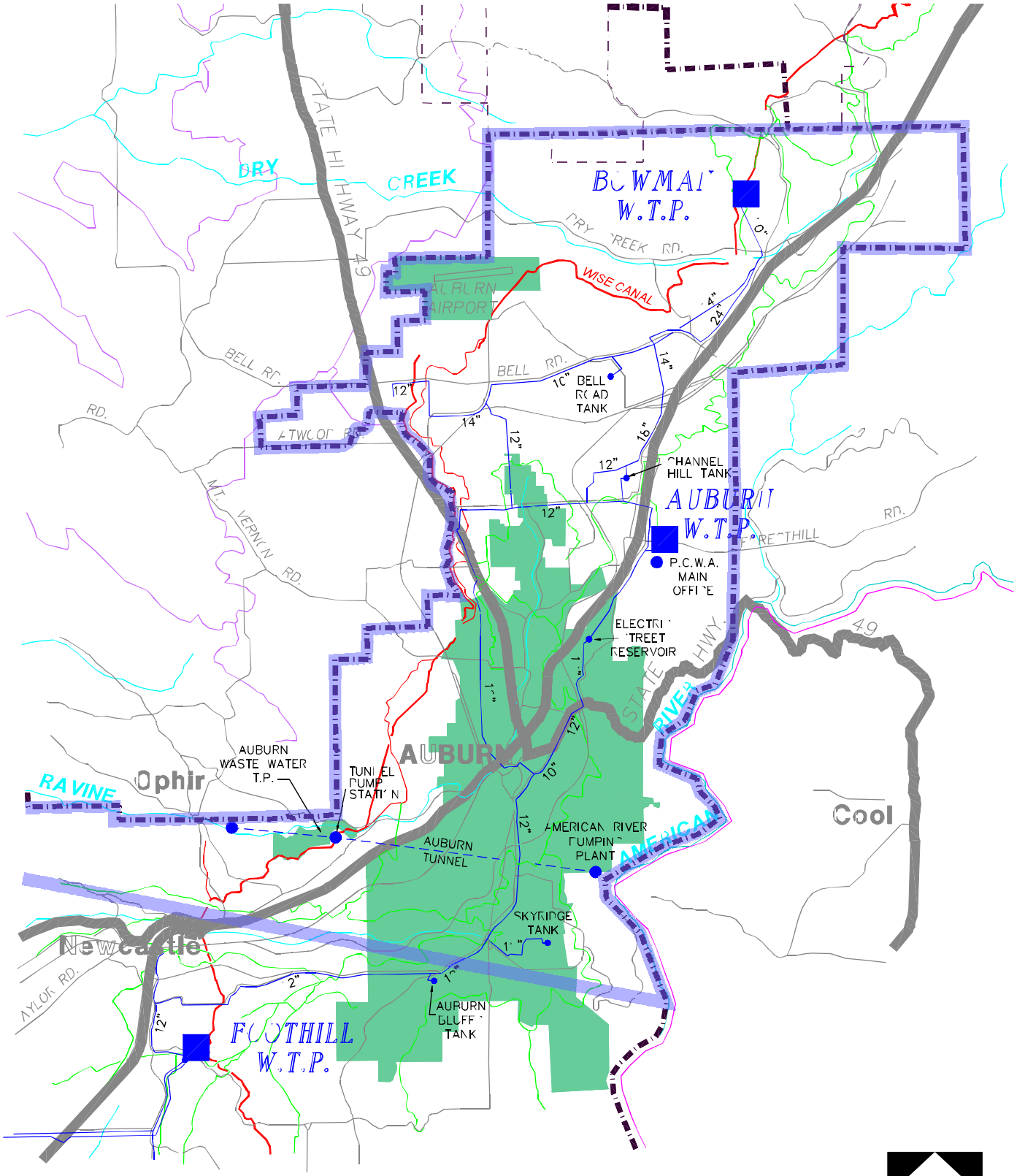
P:\20000\20649-PCWA\CALFED-PROP 13 Funding\Funding-Mar 2002\Task 004-Auburn System Leak Detection and Repair



Source: Microsoft Trip Planner 98

NORTH

BROWN AND CALDWELL	DATE 2-22-02	**Placer County Water Agency, Auburn, California**	FIGURE
	PROJECT 20649	TITLE **Location Map**	**1**



Placer County Water Agency Boundary

Auburn-Bowman Domestic System Water Boundary

Source: Placer County Water Agency

DATE	PROJECT	SITE	FIGURE
2-22-02	20649-004	Placer County Water Agency, Auburn, California	2
BROWN AND CALDWELL		TITLE: Auburn-Bowman Domestic System Water Facilities	

P:\20000\20649-PCWA\CALFED-PROP 13 Funding\Funding-Mar 2002\Task 004-Auburn System Leak Detection and Repair

Regional Water Authority
Building Alliances in Northern California

Edward Winkler
Executive Director

5620 Birdcage Street
Suite 180
Citrus Heights, CA 95610

Tel: (916) 967-7692
Fax: (916) 967-7322
www.regionalwaterauthority.net

RWA

California Department of Water Resources
Attention: Ms Marsha Prillwitz
Office of Water Use Efficiency
P.O. Box 942836
Sacramento, CA 94236

February 28, 2002

Dear Ms. Prillwitz:

I am writing in support of the Placer County Water Agency's (PCWA) grant proposals to the Department of Water Resources under the 2002 Proposition 13 grant solicitation.

The Regional Water Authority is a joint powers authority of 17 water suppliers serving more than 1.2 million people in the greater Sacramento Region. Our mission is to serve and represent regional water supply interests and assist RWA members with protecting and enhancing the reliability, availability, affordability and quality of water resources. RWA is currently implementing a Regional Water Efficiency Program designed to expand measures to help area water providers fulfill Water Forum and California Urban Water Conservation Council best management practices (BMPs).

PCWA is an active member of the Regional Water Authority and the RWA Regional Water Efficiency Program. We strongly support the PCWA applications entitled "Auburn Leak Repair Project," "Auburn Water Supply Audit, Leak Detection and Repair," and "Canal and Reservoir Efficiency Feasibility Study."

The PCWA proposals further the ability of PCWA to meet their Water Forum Agreement commitments, and are fully compatible with the CALFED water quality, water supply, and environmental restoration objectives.

The Regional Water Authority recommends that the Department of Water Resources fund PCWA's proposals.

Sincerely,

Edward Winkler
Executive Director

cc: Dave Breninger